Appendix G - Bycatch Practicability Analysis

Population Effects for the Bycatch Species

Background

Actions in Amendment 8 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hardbottom Habitats of the South Atlantic Region (Coral FMP) address modifications to three Habitat Areas of Particular Concern (HAPC) in the South Atlantic, and transit through the Oculina Bank HAPC. Within the HAPCs, prohibited gear includes bottom longline, trawl, dredge, pot or trap as well as the use of an anchor, anchor and chain, or grapple and chain. Actions 1, 3, and 4 would extend these gear prohibitions to expansions of the Oculina Bank HAPC, Stetson-Miami Terrace Coral HAPC (CHAPC), and the Cape Lookout CHAPC. Therefore, as the size of these HAPCs is increased, the biological benefits would increase for coral, including coral, species that use the bottom substrate as habitat, and shrimp. Increasing the size of the HAPC may provide a refuge for other important species in the area, such as snapper grouper species by prohibiting bottom longline activity as well as anchoring. The actions would have a positive impact on reducing the potential for bycatch interactions to the degree it reduces interaction of gear, habitat, and deepwater species that may be directly or indirectly affected by habitat damage or unintended capture. Transit through the Oculina Bank HAPC (Action 2) is expected to provide socio-economic benefits, and enhance safety at sea for fishermen targeting rock shrimp on the eastern side of the Oculina Bank HAPC.

Detailed descriptions of the proposed HAPC expansions are provided in reports developed by Reed (2011), and Brooke and Ross (2012) (**Appendices J-L**). Some commercially valuable deepwater species congregate around deepwater coral habitat**.** Various crabs, especially galatheoids, are abundant on the deep reefs. Other invertebrates, particularly ophiuroids, populate the coral matrix in high numbers. Although the measures in the amendment would only modify the Coral FMP, it sets in place provisions that would have slight impacts on the shrimp and snapper grouper fisheries. The golden crab fishery operates within allowable gear areas, which are not located in the proposed HAPC expansions in Actions 1, 3, and 4. These activities would not have a direct biological impact on dolphin, wahoo, or coastal migratory pelagic species as fishing for these species does not impact bottom habitat, and would still be allowed in the expanded area.

The rock shrimp fishery is known to operate in the proposed Oculina Bank HAPC expansion area (Action 1), and royal red shrimp are targeted in the vicinity of Stetson-Miami Terrace CHAPC. Fishing for deepwater shrimp species does not occur within the proposed HAPC expansion area for Action 3. The prohibition of bottom tending gear in the proposed HAPC expansion areas is expected to provide biological benefits to coral and shrimp species, as well as reduce bycatch.

The royal red fleet utilizes the same vessels and gear as that used to target rock shrimp. In addition, many rock shrimp fishermen also participate part-time to target royal red shrimp. South Atlantic royal red shrimp are caught in the U.S. exclusive economic zone in depths from 1,080 to 1,260 feet (330 - 380 meters) (W. Moore, personal communication) to just over 1,320

feet (400 meters) (M. Solorzano, personal communication). Elsewhere, reported depth for targeted royal red shrimp ranges from 800 feet to more than 1,800 feet (250-550 meters) (Perry and Larson 2004, Rezak et al. 1985, Alabama Sea Grant 1987). Because of the depths in which royal red shrimp are caught, no Turtle Excluder Devices (TEDs) or Bycatch Reduction Devices (BRDs) are required off the east coast of Florida.

No observer trips or bycatch study exists pertaining to bycatch in the royal red shrimp sector; however, there are some bycatch data for the rock shrimp sector from a report of the National Marine Fisheries Service (NMFS) observer study conducted during September 2001 through September 2006. The main findings in this report are:

1. Rock shrimp comprised 19% of the catch by weight and 28% by number.
2. Penaeid shrimp comprised 4% of the catch by weight and 3% by number.
3. Finfish comprised 49% of the catch by weight and 30% of the catch by number.

Little is known about the status of finfish (e.g., dusky flounder, inshore lizardfish, spot, and red goatfish) and invertebrate (e.g., iridescent swimming crab, longspine swimming crab, and blotched swimming crab) species present in rock shrimp trawl bycatch in the greatest numbers. None of these species have undergone (or are likely to undergo) formal stock assessments because most, with the exception of spot, are not targeted in commercial or recreational fisheries. Data are inadequate to conduct a formal, coast-wide assessment of spot. But fishery managers believe a combination of BRD and minimum size limit requirements is sufficient to protect this stock until such an assessment can be completed (SAFMC 2010).

Although some variability in fish fauna has been observed in the region, most of the deepwater coral habitat is dominated by relatively few fish species**.** Some recreational and commercial fishing for snapper grouper species is taking place in the proposed HAPC expansion areas; however, the level of harvest is minimal (See **Section 4.0** of Coral Amendment 8). Bottom longline is one of the gear types used to target snapper grouper species but it generally occurs in shallower water than proposed HAPC expansions. The prohibition on the use of bottom longline gear within the proposed HAPCs would be expected to provide biological benefits to bottom dwelling species.

Regulations require participants in the South Atlantic snapper grouper commercial sector, who are selected by the Science and Research Director (SRD), to maintain and submit a fishing record on forms provided by the SRD. The same logbook is required for fishermen in the coastal migratory pelagics, and dolphin and wahoo fisheries. These fishermen are also required to submit logbooks with trip and effort information. Currently, discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in these fisheries. The South Atlantic Fishery Management Council (South Atlantic Council) is developing an amendment that would consider a requirement for electronic logbooks to improve the accuracy of these data.

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Management measures proposed in Amendment 8 to the Coral FMP (Coral Amendment 8) would expand the existing HAPCs to provide additional protection for deepwater corals.

Currently, there is likely very little bycatch within the proposed areas since there is only a small amount of fishing currently taking place. The proposed actions in the amendment would minimize any future bycatch in the proposed CHAPCs by: prohibiting use of bottom longline, trawls (mid-water and bottom), dredge, pot or trap; use of anchor and chain, or use a grapple and chain, and prohibiting possession of any species regulated by the Coral FMP.

Ecological Effects Due to Changes in Bycatch

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Currently, there is probably very little bycatch within the proposed HAPC expansion areas since there is not much fishing taking place there. The proposed actions in Coral Amendment 8 would minimize any future bycatch in the proposed in the HAPC expansion areas by: prohibiting use of bottom longline, trawls (mid-water and bottom), dredge, pot or trap; prohibit use of anchor and chain, or use a grapple and chain; and prohibiting possession of any species regulated by the Coral FMP. Therefore, expansion of the HAPCs would likely result in positive ecological benefits in the community structure and species diversity of deepwater ecosystems occupied by these species.

The South Atlantic Council and NMFS are in the process of developing actions that would improve bycatch monitoring in all fisheries. For example, the Joint South Atlantic/Gulf of Mexico Generic Charter/Headboat Reporting in the South Atlantic Amendment (Charter/Headboat Amendment), which has been approved by the South Atlantic Council, includes an action that would require weekly electronic reporting of landings and bycatch data for headboats in the South Atlantic. The Gulf of Mexico Fishery Management Council and the South Atlantic Council are developing an amendment that would require electronic reporting of logbook data, which would include landed and discarded fish. Better bycatch and discard data would provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, provide better estimates of interactions with protected species, and lead to better decisions regarding additional measures to reduce bycatch. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

Changes in Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

The expansion of existing HAPCs along with actions to: prohibit use of bottom longline, trawls (mid-water and bottom), dredge, pot or trap; use of anchor and chain, or use a grapple and chain; and prohibit possession of any species regulated by the Coral FMP are intended to preserve pristine areas from habitat damage. These proposed actions would prevent fisheries from expanding into the proposed areas along with associated bycatch. Therefore, the actions in Coral Amendment 8 would likely result in long-term, positive ecological benefits and prevent disruptive changes that could occur in the community structure of coral reef ecosystems if fisheries with damaging were to move into the proposed areas.

Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot, which is used far inshore of the proposed HAPC expansion areas, is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2013 LOF classifies as a Category II (78 FR 23008, April 22, 2013). Gear types used in these sectors are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the Southeast Fisheries Science Center (SEFSC) Supplementary Discard Data Program (SDDP) initiated in July 2001. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database).

Although the black sea bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot sector operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3-36.6 meters). However, the risk to protected species has likely been reduced with the implementation of Amendment 18A to the FMP for the Snapper Grouper Fishery of the South Atlantic Region, which established 32 black sea bass pot endorsements, limited the number of pots that can be fished to 35, and required that pots be returned to shore at the conclusion of a trip. There are no known interactions between the black sea bass pot sector and large whales. NMFS' biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined the possible adverse effects resulting from the fishery are extremely unlikely. The longline and hook-and-line gear components of the snapper grouper fishery in the South Atlantic are classified in the 2013 LOF (78 FR 23008, April 22, 2013) as Category III fisheries. Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the LOF the Southeastern U.S. Atlantic and Gulf of Mexico shrimp trawl fishery is listed as a Category II fishery (78 FR 23008, April 22, 2013). It is categorized as such, based on observer reports, stranding data, and fisheries research data indicating that interactions are occurring, with multiple strategic and non-strategic marine mammal stocks. In lieu of more complete data on the potential impacts to marine mammals, NMFS classified the fishery as a Category II fishery based on a qualitative analysis. Even with low observer coverage, NMFS observed 12 dolphin takes (of which 11 were serious injuries or mortalities) since 1993; 11 of which were taken since 2002. Further, Marine Mammal Authorization Program records list 1 dolphin take in shrimp trawl gear in South Carolina in 2002.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop

2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region they are found mainly off the Florida Keys (unpublished USFWS data). Interaction with South Atlantic fisheries has not been reported as a concern for either of these species.

Changes in Fishing, Processing, Disposal, and Marketing Costs

Detailed descriptions of any expected changes associated with fishing, processing, disposal, and marketing costs are contained in **Section 4.0**. The actions contained within this amendment are expected to serve as greater protections of fragile deepwater coral species through expansions of existing HAPCs. The expansions could have small negative economic impacts on fishermen who utilize these areas. Action 2 of Coral Amendment 8 would allow transit of the Oculina Bank HAPC, which would be expected to provide socio-economic benefits, and enhance safety at sea for fishermen targeting rock shrimp on the eastern side of the Oculina Bank HAPC.

Changes in Fishing Practices and Behavior of Fishermen

The proposed expansions of the HAPCs would be expected to have a small effect on the rock shrimp fleet, royal red shrimp fleet, and possibly other commercial fisheries by closing some historic, present, and potential future fishing grounds. Establishment of a transit provision through the Oculina Bank HAPC is expected have a positive effect on shrimp operations as fishermen would not need to travel around the larger Oculina Bank HAPC when fishing on the eastern side of this feature. Furthermore, fishermen would be able to more easily return to port when poor weather conditions affect vessel safety.

Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

The actions in Coral Amendment 8 would affect some measure of change in research, administration, and enforcement costs and management effectiveness. See **Chapter 4** of each amendment for more details. Research is ongoing to discover additional areas of deepwater coral (**Appendices J-L**), and the South Atlantic Council has been very active in providing protection for these areas. Furthermore, in July 2013, the Chairmen of the South Atlantic Council, Mid-Atlantic Fishery Management Council, and New England Fishery Management Council signed a Memorandum of Understanding (MOU) to help coordinate the protection of deepsea corals off the east coast of the United States from Maine to eastern Florida. The MOU identifies areas of consensus and strategies to promote more effective coordination of deepsea coral conservation efforts among the Councils.

Research and monitoring is ongoing to understand the effectiveness of proposed management measures and their effect on bycatch of various fisheries. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic, and the same logbook program is required for use by commercial fishermen targeting coastal migratory peglagic species as well as dolphin and wahoo. Approximately 20% of commercial fishermen from snapper grouper, dolphin wahoo, and coastal migratory pelagic fisheries are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. Recreational discards are obtained from the Marine Recreational Information Program and logbooks from the NMFS headboat program.

The preferred alternative in Charter/Headboat Amendment, which has been approved by the South Atlantic Council, would require electronic reporting for headboats and increase the frequency of reporting to seven days for the snapper grouper, dolphin wahoo, and coastal migratory pelagic fisheries in the Atlantic. Some observer information for the snapper grouper fishery has been provided by the SEFSC, Marine Fisheries Initiative, and Cooperative Research Programs (CRP), but more is desired for the snapper grouper, dolphin wahoo, reef fish, and coastal migratory pelagics fisheries. An observer program is in place for headboats in the southeast for the snapper grouper, reef fish, dolphin wahoo, and coastal migratory pelagics fisheries. Observers in the NMFS Headboat survey collect information about numbers and total weight of individual species caught, total number of passengers, total number of anglers, location fished (identified to a 10 mile by 10 mile grid), trip duration (half, ¾, full or multiday trip), species caught, and numbers of released fish with their disposition (dead or alive). The headboat survey does not collect information on encounters with protected species. At the September 2012 South Atlantic Council meeting, the SEFSC indicates that observers are place on about 2% of the headboat trips out of South Carolina to Florida, and about 9% of the headboat trips out of North Carolina (http://www.safmc.net/LinkClick.aspx?fileticket=XGaVZzxLePY%3d&tabid=745).

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information from fisheries in the Gulf and South Atlantic. Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Marine Fisheries Initiative, Saltonstall-Kennedy program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Stranding networks have been established in the Southeast Region. The NMFS SEFSC is the base for the Southeast United States Marine Mammal Stranding Program (http://sero.nmfs.noaa.gov/pr/strandings.htm). NMFS authorizes organizations and volunteers under the MMPA to respond to marine mammal strandings throughout the United States. These organizations form the stranding network whose participants are trained to respond to, and collect samples from live and dead marine mammals that strand along southeastern United State beaches. The SEFSC is responsible for: Coordinating stranding events; monitoring stranding rates; monitoring human caused mortalities; maintaining a stranding database for the southeast region; and conducting investigations to determine the cause of unusual stranding events including mass strandings and mass mortalities (http://www.sefsc.noaa.gov/species/mammals/strandings.htm).

The Southeast Regional Office and the SEFSC participate in a wide range of training and outreach activities to communicate bycatch related issues. The NMFS Southeast Regional Office issues public announcements, Southeast Fishery Bulletins, or News Releases on different topics, including use of turtle exclusion devices, bycatch reduction devices, use of methods and devices to minimize harm to turtles and sawfish, information intended to reduce harm and interactions with marine mammals, and other methods to reduce bycatch for the convenience of constituents in the southern United States. These are mailed out to various organizations,

government entities, commercial interests and recreational groups. This information is also included in newsletters and publications that are produced by NMFS and the various regional fishery management councils. Announcements and news released are also available on the internet and broadcasted over NOAA weather radio.

Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery-independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

The preferred management measures, and any changes in economic, social, or cultural values are discussed in **Section 4.0** of Coral Amendment 8.

Changes in the Distribution of Benefits and Costs

The actions contained within this amendment are expected to serve as greater protections of fragile deepwater coral species; however, very little fishing is currently taking place in the proposed HAPC expansion areas. Coral Amendment 8 also includes an action to allow for transit of the Oculina Bank HAPC, which would be expected to provide socio-economic benefits for rock shrimp fishermen and address safety at sea concerns. Therefore, little change is expected in the distribution of costs associated with the proposed action in Coral Amendment 8. Discussion associated displacement effects, costs, and benefits associated with various alternatives for vessels that would normally fish in the proposed expansion areas are described in **Section 4.0**.

Social Effects

The Social Effects of all the proposed management measures are described in **Section 4.0**.

Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR 600.350(d)(3)(i). Actions in this bycatch practicability analysis are intended to prohibit damaging gear from operating in deepwater coral habitat, and allowing for transit through the Oculina HAPC. The proposed actions would have a positive impact on reducing the potential for bycatch interactions to the degree it reduces interaction of gear, habitat and deepwater species that may be directly or indirectly affected by habitat damage or unintended capture. Currently, there is probably very little bycatch within the proposed areas since there is not much fishing taking place there. The proposed actions in the amendment would minimize any future bycatch in the proposed HAPC expansion areas by: Prohibiting use of bottom longline, trawls (mid-water and bottom), dredge, pot or trap; prohibit use of anchor and chain, or use a grapple and chain; and prohibiting possession of any species regulated by the coral FMP. Therefore, expansion of the HAPCs would likely result in positive ecological benefits in the community structure and species

diversity of deepwater ecosystems occupied by these species. Transit through the Oculina HAPC (Action 2) is expected to provide socio-economic benefits, and enhance safety at sea for fishermen targeting rock shrimp on the eastern side of the Oculina HAPC.

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